CTGCAGTCTATTGGATGAAGAGTGTACATATTCATATAATTCTTAAAGTAGGCAGAAATTAAAG
GGGATGGAAATATATACTTGTACTGCCTTAGATAGTCACCAGGATGTTGTTACAGTCTTCGTTT
ACTGCTTCTGAAGCCTATACTGATAGAATTAATAAAATACTGAGAGAGAGAGAGAGGGACAGAG
AGAGAGAGGGGGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAAGA
GAAGAAAACAAGGTSAAGCCATCTGCTTAACTTATGTCCACATTCTCTCAAGAGCATTGTCCTA
TTTGTAGAATTATCTATATTGTTAAGAATCATCTCCATTGTTAAGATTTTGTGGGCTGGAGATC
CAGCTCTGTTGATAAAGTGCTTGCCTAACATGCATGAAGTCCTAGGTTCTATTCCCAAGGCTAC
ATAAAACCTTGTGTTGTGATGAATGCCTGTAATCCCAGTACGCAGCAAGGAGAGACAAGGAGGA
TCAGAAGCTTAAGGACATCATTTTGTACATAGTGAGTTTGAGGAAAGCTGAGGTTACATGGAAC
TCTCTCTCTCAAAAACAAAACAAAACAAAACAAAACCTTCTACTAATATTCTGGATTCTGTT
TGATTTTTAGGATCTCAAGAGCATGCTGACGTCATTTATGTGTTTCCATCAGATACAGACAGAG
ATCATAAACATTTAACTCATTGATTATATGTTGAGAGTTGTCCCTCAAGAACCAATGGCCAAAC
ATCCACTGAGGATACACGGAAGCTTAGAAAATCTCTAATTAAAATCCTGACATAATGGAAGTGC
TCACAAACCAGCCAACACCTAATAAAACCAGTGGCAAGAGCAACAACTCGGCATTTTTCTACTT
TGAATCCTGCCAACCCCCTTTTCTAGCCATACTCTTGCTACTCATAGCATATACTGTGATCCTA
ATCATGGGCATTTTTGGAAACCTCTCTCTTATCATCATCATCTTTAAGAAACAGAGAGAAGCTC
AAAATGTTACCAACATACTGATTGCCAACCTGTCCCTCTCTGACATCTTGGTGTGTGTCATGTG
CATCCCTTTTACGGTCATCTACACTCTGATGGACCACTGGGTATTTGGGAACACTATGTGTAAA
CTCACTTCCTACGTGCAAAGTGTCTCAGTTTCTGTGTCCATATTCTCCCTTGTGTTGATTGCTA
TTGAACGATATCAGCTGATTGTGAACCCCCGTGGCTGGAAACCCAGAGTAGCTCATGCCTATTG
GGGGATCATCTTGATTTGGCTCATTTCTCTGACATTGTCTATTCCCTTATTCCTGTCCTACCAC
CTCACCAATGAGCCCTTTCATAATCTCTCTCTCCCTACTGACATCTACACCCACCAGGTAGCTT
GTGTGGAGATTTGGCCTTCTAAACTGAACCAACTCCTCTTTTCTACATCATTATTTATGCTCCA
GTATTTTGTCCCTCTGGGTTTCATTCTTATCTGCTACCTGAAGATCGTTCTCTGCCTCCGAAAA
AGAACTAGGCAGGTGGACAGGAGAAAGGAAAATAAGAGCCGTCTCAATGAGAACAAGAGGGTAA
ATGTGATGTTGATTTCCATCGTAGTGACTTTTGGAGCCTGCTGGTTGCCCTTGAACATTTTCAA
TGTCATCTTCGACTGGTATCATGAGATGCTGATGAGCTGCCACCACGACCTGGTATTTGTAGTT
TGCCACTTGATTGCTATGGTTTCTACTTGCATAAATCCTCTCTTTTATGGATTTCTCAACAAAA
ACTTCCAGAAGGATCTAATGATGCTTATTCACCACTGTTGGTGTGGTGAACCTCAGGAAAGTTA
TGAAAATATTGCCATGTCTACTATGCACACAGATGAATCCAAGGGATCATTAAAACTGGCTCAC
ATACCAACAGGCATATAGAAACTGGTAAGCAAAATCAAAGCCCTTCTGTTATGAAAGAAAGAGA
AGAAATAGTATGGAATAGGGCAAGGTGCAGAGGAAGCCAGACTTAAACACATAATATCTTTGGG
CCCAGTTTTGCTTTAAGTTAAGCATGTCTACTCCATTCAGCCATAGAACACACAGAGATTTATC
CCTACCCTTTCTTTTTTTTCCTTTGGAAGAATAATAACTTAAACAACCTAGACATCATTACTGAG
GAAGAGAACAAAAATGAGAGAGCATACAAGGACAGCAGAGATGTCTGGGGTACAAAATTCACGT
TATTCGCTGGAATAGCTAGAAAGTTATTAGTTGTGCTGCAG (SEQ ID NO:1)

FIGURE 1

<u>underlined</u> = deleted in targeting construct

[ ] = sequence flanking Neo insert in targeting construct

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[CTGCAGTCTATTGGATGAAGAGTGTACATATTCATATAATTCTTAAAGTAGGCAGAAAT
TAAAGGGGATGGAAATATATACTTGTACTGCCTTAGATAGTCACCAGGATGTTGTTACAG
TCTTCGTTTACTGCTTCTGAAGCCTATACTGATAGAATTAATAAAATACTGAGAGAGAGA
GAGAGGGACAGAGAGAGAGAGGGGGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGA
GAGAGAGAGAGAGAAGAGAAGAAAACAAGGTSAAGCCATCTGCTTAACTTATGTCCACAT
TCTCTCAAGAGCATTGTCCTATTTGTAGAATTATCTATATTGTTAAGAATCATCTCCATT
GTTAAGATTTTGTGGGCTGGAGATCCAGCTCTGTTGATAAAGTGCTTGCCTAACATGCAT
GAAGTCCTAGGTTCTATTCCCAAGGCTACATAAAACCTTGTGTTGTGATGAATGCCTGTA
ATCCCAGTACGCAGCAAGGAGAGACAAGGAGGATCAGAAGCTTAAGGACATCATTTTGTA
CATAGTGAGTTTGAGGAAAGCTGAGGTTACATGGAACTCTCTCTCTCTCAAAAACAAAAC
AAAACAAAACAAAACCTTCTACTAATATTCTGGATTCTGTTTGATTTTTAGGATCTCAAG
AGCATGCTGACGTCATTTATGTGTTTCCATCAGATACAGACAGAGATCATAAACATTTAA
CTCATTGATTATATGTTGAGAGTTGTCCCTCAAGAACCAATGGCCAAACATCCACTGAGG
ATACACGGAAGCTTAGAAAATCTCTAATTAAAATCCTGACATAATGGAAGTGCTCACAAA
CCAGCC]AACACCTAATAAAACCAGTGGCAAGAGCAACAACTCGGCATTTTTCTACTTTG
AATCCTGCCAACCCCCTTTTCTAGCCATACTCTTGCTACTCATAGCATATACTGTGATCC
TAATCATGGGCATTTTTGGAAACCTCTCTCTTATCATCATCATCTTTAAGAAACAGAGAG
AAGCTCAAAATGTTACCAACATACTGATT[GCCAACCTGTCCCTCTCTGACATCTTGGTG
TGTGTCATGTGCATCCCTTTTACGGTCATCTACACTCTGATGGACCACTGGGTATTTGGG
AACACTATGTGTAAACTCACTTCCTACGTGCAAAGTGTCTCAGTTTCTGTGTCCATATTC
TCCCTTGTGTTGATTGCTATTGAACGATATCAGCTGATTGTGAACCCCCGTGGCTGGAAA
CCCAGAGTAGCTCATGCCTATTGGGGGATCATCTTGATTTGGCTCATTTCTCTGACATTG
TCTATTCCCTTATTCCTGTCCTACCACCTCACCAATGAGCCCTTTCATAATCTCTCTCTC
CCTACTGACATCTACACCCACCAGGTAGCTTGTGTGGAGATTTGGCCTTCTAAACTGAAC
CAACTCCTCTTTTCTACATCATTATTTATGCTCCAGTATTTTGTCCCTCTGGGTTTCATT
CTTATCTGCTACCTGAAGATCGTTCTCTGCCTCCGAAAAAGAACTAGGCAGGTGGACAGG
AGAAAGGAAAATAAGAGCCGTCTCAATGAGAACAAGAGGGTAAATGTGATGTTGATTTCC
ATCGTAGTGACTTTTGGAGCCTGCTGGTTGCCCTTGAACATTTTCAATGTCATCTTCGAC
TGGTATCATGAGATGCTGATGAGCTGCCACCACGACCTGGTATTTGTAGTTTGCCACTTG
ATTGCTATGGTTTCTACTTGCATAAATCCTCTCTTTTATGGATTTCTCAACAAAAACTTC
CAGAAG]GATCTAATGATGCTTATTCACCACTGTTGGTGTGGTGAACCTCAGGAAAGTTA
TGAAAATATTGCCATGTCTACTATGCACACAGATGAATCCAAGGGATCATTAAAACTGGC
TCACATACCAACAGGCATATAGAAACTGGTAAGCAAAATCAAAGCCCTTCTGTTATGAAA
GAAAGAGAAGAAATAGTATGGAATAGGGCAAGGTGCAGAGGAAGCCAGACTTAAACACAT
AATATCTTTGGGCCCAGTTTTGCTTTAAGTTAAGCATGTCTACTCCATTCAGCCATAGAA
CACACAGAGATTTATCCCTACCCTTTCTTTTTTTCCTTTGGAAGAATAATAACTTAAACA
ACCTAGACATCATTACTGAGGAAGAGAACAAAAATGAGAGAGCATACAAGGACAGCAGAG
ATGTCTGGGGTACAAAATTCACGTTATTCGCTGGAATAGCTAGAAAGTTATTAGTTGTGC
TGCAG (SEQ ID NO:1)
```

FIGURE 2A

Gene Sequence Structure
*

846 bp   Sequence Deleted   1047 bp

Size of CDS: 2281 bp

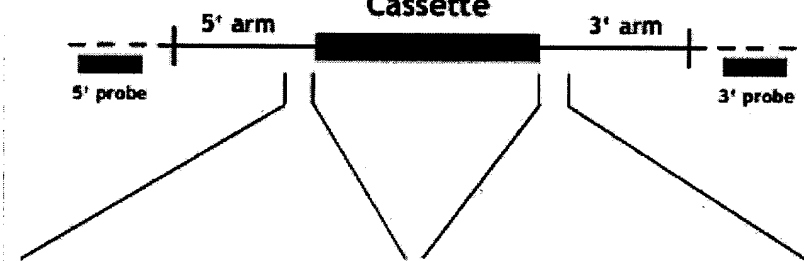**Targeting Vector***
(genomic sequence)

Construct Number: 2762

LacZ-Neo
Cassette

5' arm   3' arm

5' probe   3' probe

Arm Length:
5': 5 kb
3': 0.5 kb

——— Targeting Vector
- - - - - Endogenous Locus

* Not drawn to scale

```
5'>TTTAGGATCTCAAGAGCATGC
TGACGTCATTTATGTGTTTCCATC
AGATACTGACAGAGATCATAAACA
TTTAACTCATTGATTATATGTTGA
GAGTTGTCCCTCAAGAACCAATGG
CCAAACATCCACTGAGGATACACG
GAAGCTTAGAAAATCTCTAATTAA
AATCCTGACATAATGGAAGTGCTC
ACAAACCAGCC<3'
(SEQ ID NO:2)
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5'>GCCAACCTGTCCCTCTCTGAC
ATCTTGGTGTGTGTCATGTGCATC
CCTTTTACGGTCATCTACACTCTG
ATGGACCACTGGGTATTTGGGAAC
ACTATGTGTAAACTCACTTCCTAC
GTGCAAAGTGTCTCAGTTTCTGTG
TCCATATTCTCCCTTGTGTTGATT
GCTATTGAACGATATCAGCTGATT
GTGAACCCCCG<3'
(SEQ ID NO:3)
```

FIGURE 2B